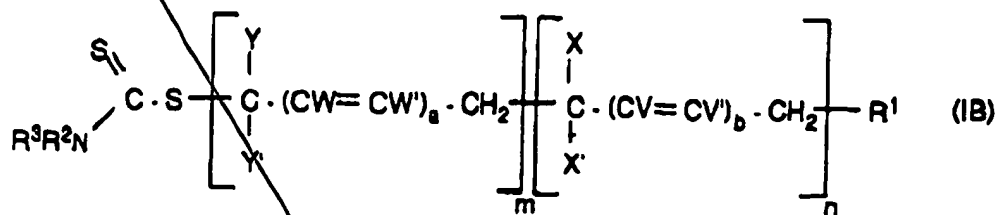
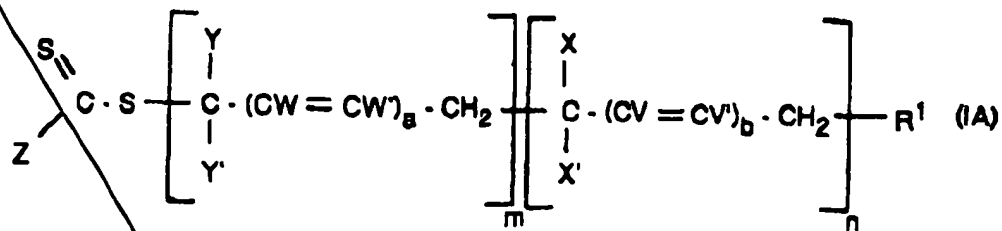


29. A process for preparing block polymers of general formula (IA) or (IB):




in which formulae:

- R<sup>1</sup> represents:


an optionally substituted alkyl, acyl, aryl, alkene or alkyne group (i),  
an optionally substituted or aromatic, saturated or unsaturated, carbocycle (ii), or  
an optionally substituted or aromatic, saturated or unsaturated, heterocycle (iii),  
optionally, these groups and rings (i), (ii) and (iii) are substituted with substituted  
phenyl groups, substituted aromatic groups, or groups: alkoxycarbonyl or  
aryloxycarbonyl (-COOR), carboxyl (-COOH), acyloxy (-O<sub>2</sub>CR), carbamoyl  
(-CONR<sub>2</sub>), cyano (-CN), alkylcarbonyl, alkylarylcarbonyl, arylcarbonyl,  
arylalkylcarbonyl, phthalimido, maleimido, succinimido, amidino, guanidino,  
hydroxyl (-OH), amino (-NR<sub>2</sub>), halogen, allyl, epoxy, alkoxy (-OR), S-alkyl, S-aryl,

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PRELIMINARY AMENDMENT

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organosilyl, groups having a hydrophilic or ionic character, such as the alkali metal salts of carboxylic acids, the alkali metal salts of sulphonic acid, polyalkylene oxide chains (PEO, PPO), cationic substituents (quaternary ammonium salts),

R representing an alkyl or aryl group,

A2 

- Z is an optionally substituted ring comprising a nitrogen atom via which Z is linked to the C(=S)-S- group of formula (IA), the other atoms of said ring inducing a delocalizing or electron-withdrawing effect with respect to the electron density of the nitrogen atom,

-R<sup>2</sup> and R<sup>3</sup>, which are identical or different, represent:

an optionally substituted alkyl, acyl, aryl, alkene or alkyne group (i),

an optionally substituted or aromatic, saturated or unsaturated, carbocycle (ii), or

an optionally substituted, saturated or unsaturated, heterocycle (iii),

optionally, these groups and rings (i), (ii) and (iii) are substituted with:

. substituted phenyl groups or substituted aromatic groups,

. groups: alkoxycarbonyl or aryloxy carbonyl (-COOR), carboxyl (-COOH),

acyloxy (-O<sub>2</sub>CR), carbamoyl (-CONR<sub>2</sub>), cyano (-CN), alkylcarbonyl,

alkylarylcarbonyl, arylcarbonyl, arylalkylcarbonyl, phthalimido, maleimido,

succinimido, amidino, guanidino, hydroxyl (-OH), amino (-NR<sub>2</sub>), halogen,

allyl, epoxy, alkoxy (-OR), S-alkyl, S-aryl,

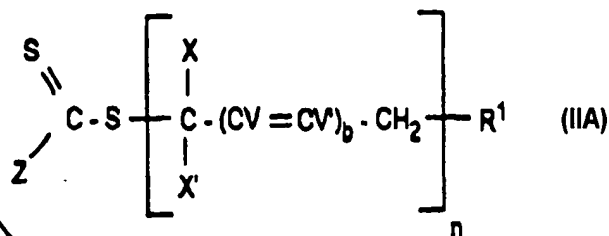
. groups having a hydrophilic or ionic character, such as the alkali metal salts of carboxylic acids, the alkali metal salts of sulphonic acid, polyalkylene oxide chains (PEO, PPO), cationic substituents (quaternary ammonium salts),

R representing an alkyl or aryl group,

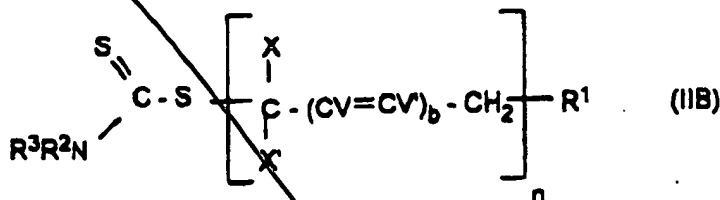
and, for at least  $R^2$  or  $R^3$ , these groups and rings (i), (ii) and (iii) induce a delocalizing or electron-withdrawing effect with respect to the electron density of the nitrogen atom to which  $R^2$  and  $R^3$  are linked,

- V, V', W and W', which are identical or different, represent: H, an alkyl group or a halogen,
  - X, X', Y and Y', which are identical or different, represent H, a halogen, a group  $R'$ ,  $OR'$ ,  $OCOR'$ ,  $NHCOH$ ,  $OH$ ,  $NH_2$ ,  $NHR'$ ,  $N(R')_2$ ,  $(R')_2N^+O^-$ ,  $NHCOR'$ ,  $CO_2H$ ,  $CO_2R'$ ,  $CN$ ,  $CONH_2$ ,  $CONHR'$  or  $CONR'_2$ , wherein  $R'$  is alkyl, aryl, aralkyl, alkaryl, alkene or organosilyl groups, optionally perfluorinated and optionally substituted with one or more carboxyl, epoxy, hydroxyl, alkoxy, amino, halogen or sulphonic groups,
  - a and b, which are identical or different, are equal to 0 or 1,
  - m and n, which are identical or different, are greater than or equal to 1 and, when one or other is greater than 1, the individual repeat units are identical or different,
- said process comprising the step of bringing into contact with each other:
- an ethylenically unsaturated monomer of formula:  
 $CYY'(=CW-CW')_a=CH_2$ ,
  - a precursor compound of general formula (IIA) or (IIB):

Sub B1  
cont.



A2



wherein Z, X, X', V, V', R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> have the same meaning, and b and n the same value, as previously; and

- a radical polymerization initiator.

30. A process according to claim 29, wherein the ethylenically unsaturated monomer is styrene, butadiene, chloroprene, (meth)acrylic esters, or vinyl nitriles.

31. A process according to claim 29, wherein, in compounds of formula (IA) and (IIA), the ring Z is a ring made of carbon atoms.

32. A process according to claim 29, wherein the ring Z further comprises at least one heteroatom other than the nitrogen which links the ring Z to -C(=S)S, this heteroatom being O, S, N or P.

33. A process according to claim 29, wherein, in the compounds of formula (IA) and (IIA), the ring Z is an aromatic ring.

34. A process according to claim 29, wherein, in the compounds of formula (IA) and (IIA), the ring Z comprises at least one of the following functional groups:

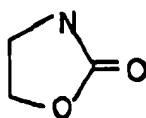
carbonyl (C=O), SO<sub>2</sub>, POR'', R'' representing an alkyl, aryl, OR, SR or NR<sub>2</sub> group, wherein the R group is identical or different and represents an alkyl or aryl group.

AZ  
35. A process according to claim 29, wherein, in the compounds of formula (IA) and (IIA), the ring Z is substituted with at least one of the following groups: alkyl, aryl, alkoxycarbonyl or aryloxycarbonyl (-COOR), carboxyl (-COOH), acyloxy (-O<sub>2</sub>CR), carbamoyl (-CONR<sub>2</sub>), R representing an alkyl or aryl group, cyano (-CN), alkylcarbonyl, alkylarylcarbonyl, arylcarbonyl, arylalkylcarbonyl, phthalimido, maleimido, succinimido, amidino, guanidino, hydroxyl (-OH), amino (-NR<sub>2</sub>), halogen, allyl, epoxy, alkoxy (-OR), S-alkyl, S-aryl, groups having a hydrophilic or ionic character, polyalkylene oxide chains, or cationic substituents.

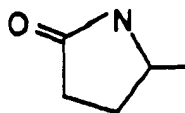
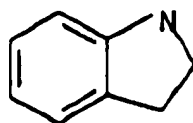
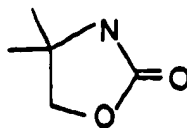
36. A process according to claim 29, wherein, in the compounds of formula (IA) and (IIA), the ring Z is substituted with at least one carbocycle or a heterocycle, optionally aromatic or substituted.

37. A process according to claim 36, wherein, in the compounds of formula (IA) and (IIA), the ring Z and its cyclic substituent have two common atoms.

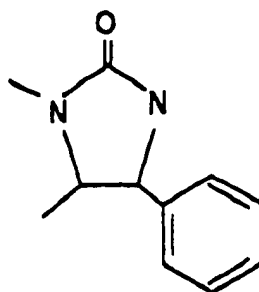
38. A process according to claim 29, wherein the ring Z is one of the following rings:



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or



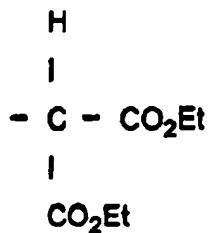
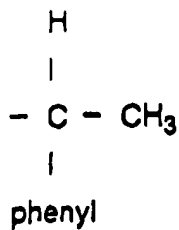
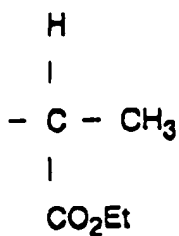
39. A process according to claim 29, wherein, in compounds of formula (IB) and (IIB),  $R^2$  or  $R^3$  exert a  $\pi$  withdrawing effect.

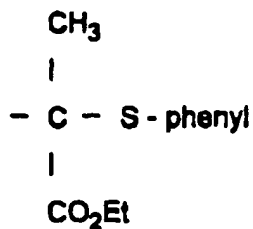
40. A process according to claim 40, wherein  $R^2$  or  $R^3$  represent a carbonyl or (hetero)aromatic group.

41. A process according to claim 40, wherein, in compounds of formula (IB) and (IIB), R<sup>2</sup> or R<sup>3</sup> exert a  $\Sigma$  withdrawing effect.

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42. A process according to claim 29, wherein R<sup>2</sup> or R<sup>3</sup> represent an alkyl group substituted with electron-withdrawing groups.

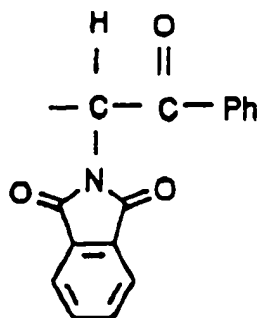
43. A process according to claim 29, wherein R<sup>1</sup> is one of the following groups:





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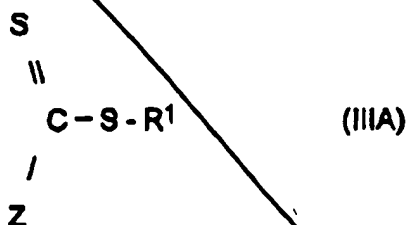
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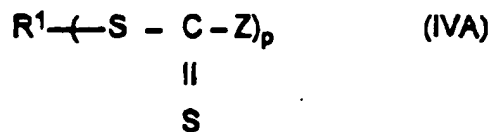
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Sub B2

44. A process according to claim 29, wherein the precursor compound of general formula (IIA) is a polymer coming from the radical polymerization of an ethylenically unsaturated monomer of formula:  $\text{CXX}'(=\text{CV}-\text{CV}')_b=\text{CH}_2$  during which said monomer is brought into contact with a radical polymerization initiator and a compound of general formula (IIIA) or (IVA):





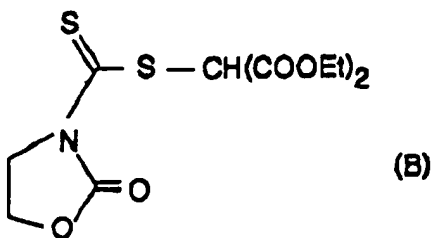
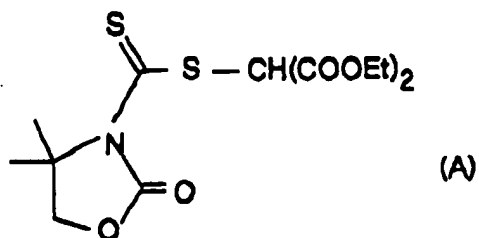


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p being between 2 and 10.

45. A process according to claim 44, wherein the compound of formula (IIIA) is a compound of the following formulae:



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CN(C)(C)S=C1N(C(C)(C)C)C(=O)O1 (F)

AJ

CCOC(=O)C(S=C1N(C2=CC=CC=C2)COC1=O)C(=O)OCC (G)

or

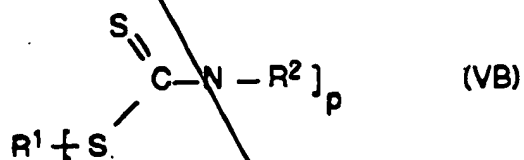
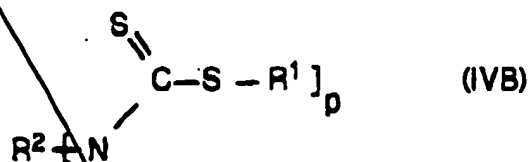
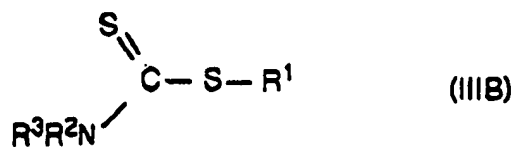
CCOC(=O)C(S=C1N(C(=O)OC)COC1=O)C(=O)OCC (H)[illegible]

Sub B3

46. A process according to claim 29, wherein the precursor compound of general formula (IIB) is a polymer coming from the radical polymerization of an ethylenically unsaturated monomer of formula:  $CXX'(=CV-CV')_b=CH_2$  during which said monomer is brought into contact with a radical polymerization initiator and a compound of general formula (IIIB), (IVB) or (VB):

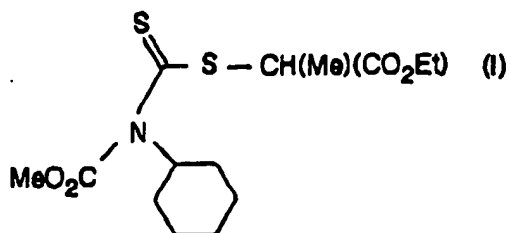
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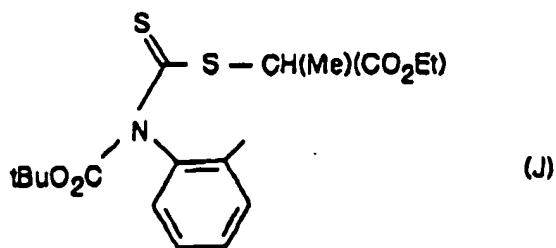
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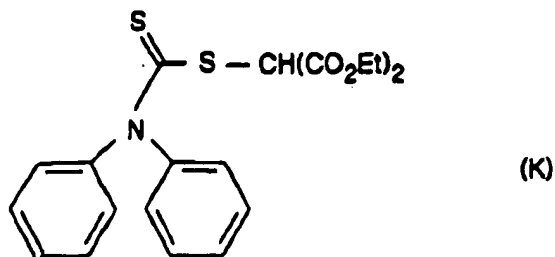
p being between 2 and 10.

47. A process according to claim 46, wherein the compound of formula (IIIB) is a compound of the following formulae:

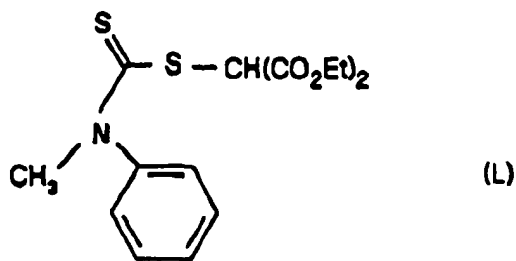




*A2*



or



48. A process for preparing multiblock polymers, comprising the step of:
- a) repeating at least once the implementation of the process of claim 29, using:
- different monomers from those of the previous implementation, and

- instead of the precursor compound of formula (IIA) or (IIB), the block polymer coming from the previous implementation.

49. Block polymer made by the process according to claim 29.

50. Block polymer according to claim 49, having a polydispersity index of at most

2.

51. Block polymer according to claim 50, having a polydispersity index of at most

1.5.

52. Block polymer according to claim 49, having at least two polymer blocks

chosen from the following combinations:

- polystyrene/polymethyl acrylate,
- polystyrene/polyethyl acrylate,
- polystyrene/poly(*tert*-butyl acrylate),
- polyethyl acrylate/polyvinyl acetate,
- polybutyl acrylate/polyvinyl acetate, or
- poly(*tert*-butyl acrylate)/polyvinyl acetate.